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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,209	05/14/2007	Olivier Larcher	1022702-000319	6020

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EXAMINER	
HEVEY, JOHN A	

ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
11/21/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

Office Action Summary	Application No.	Applicant(s)	
	10/589,209	LARCHER ET AL.	
	Examiner	Art Unit	
	JOHN A. HEVEY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-31 and 33-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-31 and 33-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/8/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

Claim 32 has been cancelled, claims 39-45 are new. Claims 20-31 and 33-45 are pending and presented for examination.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 20-30, 39-41 and 44-45 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Aozasa (US6171572).

In regards to claims 20-27 and 39-41, Aozasa teaches a zirconium – cerium composite oxide and a co-catalyst for purifying exhaust gas comprising Zr/Ce weight ratio of 51-95:49-5 and optionally further comprising one or more additives selected from yttrium, scandium, lanthanum, praseodymium, neodymium, samarium, europium, gadolinium, magnesium, calcium, barium, aluminum, titanium, and hafnium in the amount of 0.1-20% by weight, and where said composite oxide has a specific surface area of not smaller than 50 m^2/g and is capable of maintaining a specific surface area of at least 20 m^2/g after calcination at 1100 C for 6 hours (see col 3, ln 23-38).

In regards to the claim limitation, “consisting essentially of” limits the scope of a claim to the specified materials "that do not materially affect the basic and novel characteristics" of the claimed invention, and it has been held that the use of well known additives, would not materially affect the basic and novel characteristics of a claimed invention (see MPEP 2111.03). Aozasa teaches the use of cerium oxide is a well known additive or co-catalyst having the properties of purifying noxious components in exhaust gases (see col 1, ln 15-34). It is deemed that the addition of cerium oxide would have a well known and beneficial effect, and therefore would not materially affect the basic and novel characteristics of the claimed invention.

The reference further teaches specific embodiments, comprising zirconium, cerium and lanthanum oxide, which have a specific surface area of over 70 m^2/g after 900 C calcination for 6 hours, over 50 m^2/g after 1000 C calcination for 6 hours, and over 20 m^2/g after 1100 C for 6 hours (see examples 1-8, Table 1). Although Aozasa does not teach the specific surface area of the material after a 10 hour calcination at 1000 C, it teaches values which are clearly equivalent to our better than required by the instant claims. In fact, the reference teaches specific surface areas of over 24 m^2/g for 6 hour calcination at 1100 C which is considerably higher than that required by claims 24 and 25. It is therefore concluded, that the composition as taught by Aozasa would inherently possess the properties as required by claims 20-27 and 39-41.

In the alternative, as the reference teaches the same composition and substantially the same method of making, one would expect the material to have specific surfaces areas similar to that claimed. The Patent and Trademark Office can require Applicant to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on Applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art products evidences fairness of this rejection, In re Best, Bolton, and Shaw, 195 U.S.P.Q. 431 (CCPA 1977).

In regards to claim 28, Aozasa teaches additive components which do not exceed 50% by weight. See for instance, Examples 1-8, which each teach zirconium oxide to comprise at least 65% of the composition by weight (see Table 1).

In regards to claims 29-30, Aozasa teaches compositions comprising zirconium oxide and additives of cerium oxide and lanthanum oxide, teaches overlapping ranges of additive addition, and specific embodiments including additives in the amount of 34.2 and 25.1% by weight (see examples 1 and 2 respectively) which read on the required ranges.

In regards to claims 44-45, Aozasa teaches a material which forms a partial or substantial composite oxide or a solid solution (see col 4, ln 10-18). It is therefore considered that the reference meets the instant claims. In the alternative, as the reference teaches substantially the same materials and method of forming the material, one would expect the material to have a structure similar to that claimed. Thus, it would necessarily follow that the material as taught by Aozasa would inherently or would necessarily form a solid solution and/or mixture of different phases as required by claims 44 and 45, respectively.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 31, 36-38 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aozasa (US6171572).

In regards to claim 31, Aozasa is silent to the porosity of the composition, however since the reference teaches substantially the same materials and method of forming the material, one would expect the material to have a pore size similar to that claimed. Thus, it would follow that the material as taught by Aozasa would inherently or would necessarily possess the pore size as required by claim 31.

In regards to claims 36-38, Aozasa teaches a composition as required by claim 20 (see rejection above) and teaches that such a composition is useful as a co-catalyst in catalyst systems further comprising metals such as platinum, palladium, or rhodium and methods of treating exhaust gases with said catalyst systems. It would have been obvious to one of ordinary skill in the art, in view of the teachings of Aozasa to form a catalyst system comprising the zirconium, cerium, lanthanum composite oxide further comprising a metal such as Pt, Pd, or Rh. The addition of metals such as Pt, Pd, and Rh to a zirconium composite oxide support is well known in the art (see for example (US20030224931)). It would have been further obvious to one of ordinary skill in the art to use such a catalyst system to treat exhaust gases, in order to enhance the properties of the catalytic metals, and to increase the industrial applicability of the invention.

In regards to claim 42, the reference teaches a catalyst material further comprising additional catalyst metals such as platinum (see above); it would necessarily follow that said catalyst material serve as a catalyst support for the additional catalyst metals. In effect, Aozasa teaches a catalyst material which is,

or in the alternative, would be obvious to one of ordinary skill in the art to utilize as a catalyst support, in order to enhance the catalytic properties of a catalyst system, thus increasing the industrial applicability of the invention.

6. Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aozasa (US6171572) in view of Yamamoto et al. (US2003/0224931).

In regards to claims 33-35, Aozasa teaches a method of making a catalyst material comprising steps for forming a mixture of zirconium, lanthanum, and cerium nitrates, adding to the mixture deionized water and ammonia (a basic compound), forming a precipitate, heating said precipitate at 500 C to form a gel, and further calcining said gel at 900, 1000, and 1100 C (see example 1 and comparative example 1). Aozasa fails however, to teach the addition of a surfactant or carboxylic acid compound during the preparation as required by claim 33.

Yamamoto et al. ("Yamamoto") teaches a method of making a zirconium-cerium oxide catalyst material comprising steps of forming an aqueous mixture of cerium nitrate and zirconium oxynitrate, adding hydrogen peroxide and ammonia, forming a precipitate, adding cationic and anionic surfactants, and calcining the resultant mixture (see Embodiment 1). Yamamoto further teaches an embodiment in which a mixture of a liquid component and decomposed zirconium and cerium compounds are heated, a surfactant is added to form a homogeneous precursor, and followed by a calcination (see [0066]-[0068]).

It would have been obvious to one of ordinary skill in the art to modify the teachings of Aozasa to add a surfactant during the preparation of the zirconium oxide containing material. The use of surfactants in the preparation of catalyst or catalyst supports is well known in the art, in order to direct or enhance the structure of resulting product. In addition, Yamamoto teaches that the use of a suitable surfactant will improve the diffusion properties of the additive particles (see [0054]). Furthermore, it would have been obvious to one of ordinary skill in the art to modify the teachings of Aozasa in view of Yamamoto to perform the addition of a surfactant material before or after a heating step in order to modify the effects of the surfactant on the structure of resulting material.

7. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aozasa (US6171572, of record) in view of Murakami et al. (US5063192).

In regards to claim 43, Aozasa teaches a composition as required by claim 20 (see above). Murakami et al. teaches a honeycomb substrate having a wash coat applied, said wash coat solution comprising zirconium nitrate, lanthanum nitrate, and aluminum oxide, and boehmite (see for example col 7, ln 8-20).

It would have been obvious to one of ordinary skill in the art to utilize the composition as taught by Aozasa comprising zirconium and lanthanum in a wash coat solution for application to a substrate such as a honeycomb structure as taught by Murakami. One of ordinary skill in the art would have been motivated to make such a modification in order to produce a catalyst having a high surface

area and enhanced catalytic properties, thus increasing the industrial applicability of the invention. One of ordinary skill would have a reasonable expectation of success with such a modification.

Response to Arguments

8. Applicant's arguments filed 8/8/2008 have been fully considered but they are not persuasive. Applicant argues that claim 20 is not a product-by-process claim. This is found persuasive, however the properties required by the claim are deemed to be met by the prior art (as described in the rejection above).

9. Applicant argues that Aozasa fails to anticipate or render obvious the composition as set forth in claim 20. This is not found persuasive. Aozasa teaches a composition comprising zirconium, lanthanum and cerium oxides. In regards to the claim limitation, “consisting essentially of” limits the scope of a claim to the specified materials "that do not materially affect the basic and novel characteristics" of the claimed invention, and it has been held that the use of well known additives, would not materially affect the basic and novel characteristics of a claimed invention (see MPEP 2111.03). Aozasa teaches the use of cerium oxide is a well known additive or co-catalyst having the properties of purifying noxious components in exhaust gases (see col 1, ln 15-34). It is deemed that the addition of cerium oxide would have a well known and beneficial effect, and therefore would not materially affect the basic and novel characteristics of the claimed invention. Thus, the composition as taught by Aozasa is considered to meet the instant claim.

10. Applicant argues that claims 33-35 rejected over Aozasa in view of Yamamoto et al. would not be obvious to one of ordinary skill in the art for at least the reasons set forth for above claim 20. This is not found persuasive, as the arguments regarding claim 20 are not found persuasive, as detailed above.

11. Applicant's arguments with respect to claims 39-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN A. HEVEY whose telephone number is (571)270-

3594. The examiner can normally be reached on Monday - Friday 8:00 AM to 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. A. H./
Examiner, Art Unit 1793

/Kevin P. Kerns/
Primary Examiner, Art Unit 1793